



A PARENT'S GUIDE TO STEM



What is STEM?

STEM is a thriving field that stands for science, technology, engineering and math. Numerous schools are expanding their STEM programs because there is an overall emphasis in the field. Many companies are looking for individuals with skills in STEM, but often are not able to find qualified employees who are able to participate in a field like STEM. Because of this, our nation's industries are looking for ways to properly prepare students to be in a STEM profession. You, as a parent, can help spark your child's STEM interest. This handbook will help you navigate the steps needed to prepare your child for a STEM career including college and their first internship.

Job Opportunities

Why is there such a shortage of employees with STEM skills? Many young students do not want to take science and math classes and do not continue to take them in college. A lot of young students may not have the opportunity to experience these fields, and thus see them as too difficult or unattainable. Because of this problem, educators, employers and government officials are pushing to get students of all ages into the STEM field. STEM jobs are estimated to grow twice as fast as other jobs, and STEM careers are among the highest paying in the nation. College STEM graduates make approximately four times more over their lifetimes than students who study non-STEM subjects.

Idaho National Laboratory provides many opportunities for students to job shadow or receive internships. A useful resource to review is INL's STEM Help Wanted booklet and video located at inl.gov/k-12.

How Can You Help?

As a parent, you can introduce your child to STEM no matter your educational background. This guide will address many ways to do so, including taking a nature field trip, cooking, reading a biography of female scientists; provide advice on picking the right high school and classes for your child; and discuss how to prepare them for college. The most effective way to help your child get interested in STEM is to make it fun and connect STEM to the real world.



Discover a Career

Is your child having a hard time choosing a major that will suit their interests and talents? The University of Idaho offers a valuable resource for prospective students that will help them understand and discover a great path for their future. To take the informative assessment, visit uidaho.emsicc.com.

INL Internships and Job Shadow Opportunities

INL offers an excellent summer internship program that allows students to experience STEM in many different ways and learn about STEM careers. These paid internship opportunities enable students to collaborate with experienced scientists and engineers to develop innovative solutions to challenging, real-world projects. To apply, visit inl.gov/internships. INL also provides an unpaid job shadow program for high school students. It is designed to offer students an opportunity to observe a STEM professional at their everyday job. For more information, visit inl.gov/k-12.

STEM Myths

There are a handful of STEM myths and stereotypes that many people seem to have heard and may believe. Here are just a few of the common ones that don't hold up:

1. STEM is not a field that welcomes minorities, girls or women:

Employers are actually hungry for minority students and women who are in STEM fields.

2. Girls don't like math and science:

Often, girls are discouraged when parents, teachers or even friends steer them in other directions. Research shows that girls, given encouragement and support, often have deep interest and ability to do very well in STEM subjects.

3. Science and math are boring and not relevant in real life:

Science and math are used in everyday life. This can be seen across the board, from things like measurements and chemistry in cooking to explaining how a car engine works.

4. Math and science are for brainiacs only:

Studies have shown that a passion for STEM subjects is a much bigger key to success than sheer brainpower. Old teaching methods are being replaced by more exciting and success-oriented approaches in the classroom.

5. STEM jobs are isolated and lonely:

There are numerous STEM professions, and many require people to team up to solve problems, such as environmental scientists working to clean the water and air, or public health officials working with communities to wipe out disease.



Turn School Setbacks into Success

Students who fail may feel discouraged and believe they don't have the skills to succeed. Or they may be so afraid to fail that they don't even try. But making mistakes, messing up and being wrong are all just a part of life!

1. Everyone fails – Help your child understand that even successful people make mistakes or hit a dead end sometimes. Talk to them about a time you failed at something on your first try or a story that describes a similar situation. Explain how you overcame it and what you did to eventually become successful.

2. Try again – Your child didn't fail. The plan, work or performance failed. Remind them that it might not have turned out like they expected, but you know that they are capable of succeeding.

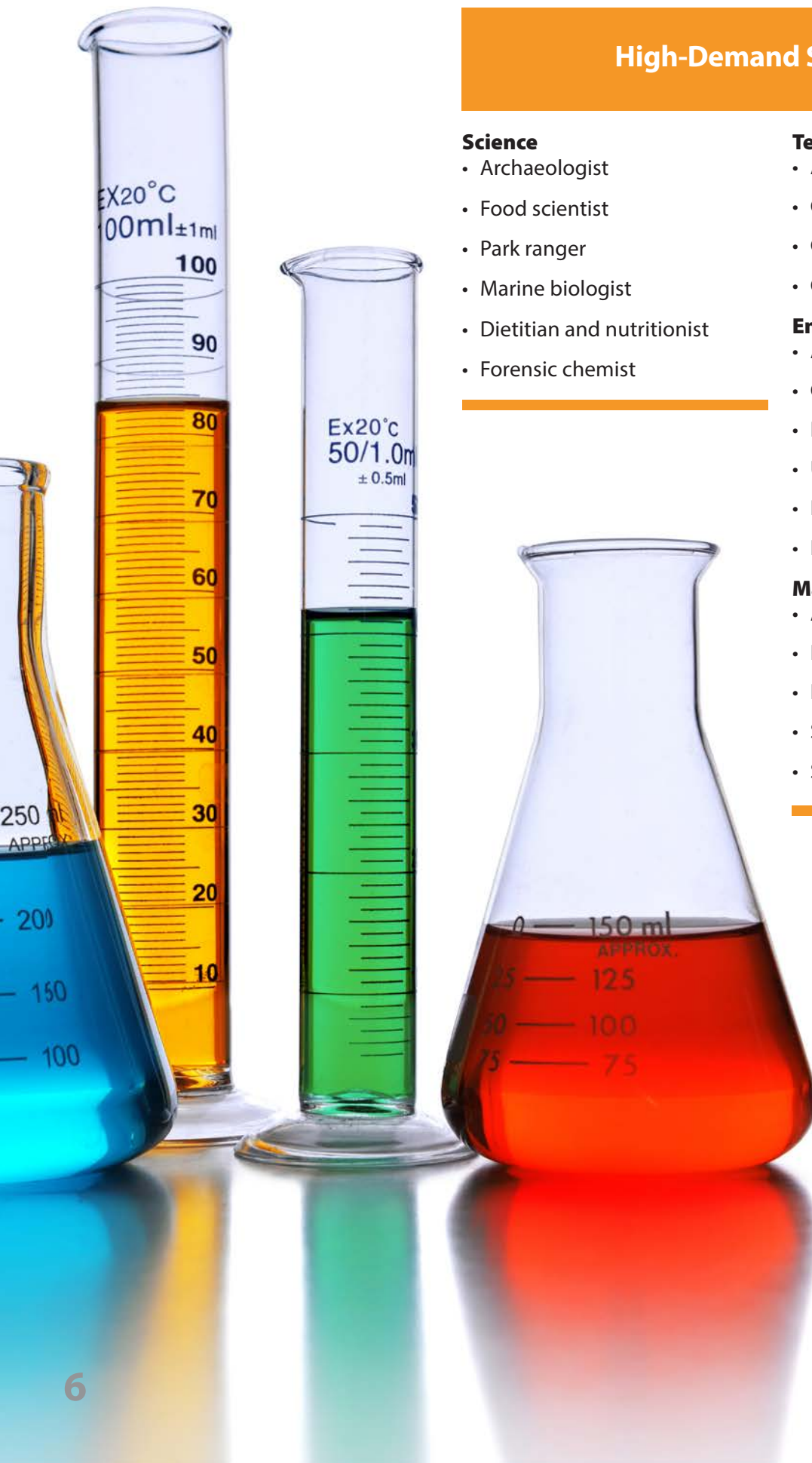
3. Troubleshoot – When your child experiences a setback, try and diagnose what the problem could possibly be. What went wrong and why? Have them think of ways that could solve the problem and approach the situation differently. Help your child apply what they've learned from failure and try again. This will not only prepare them for school, but for life as well.

Handy Homework Help

Many students need guidance when doing homework. Here are a few online resources that can assist your child in their studies:

- ck-12.org
- cliffsnotes.com
- infoplease.com
- khanacademy.org
- kids.gov
- shmoop.com
- howstuffworks.com
- nasa.gov
- discoveryeducation.com
- shodor.org/interactivate
- codeacademy.com





High-Demand STEM Jobs

Science

- Archaeologist
- Food scientist
- Park ranger
- Marine biologist
- Dietitian and nutritionist
- Forensic chemist

Technology

- Animator
- Cybersecurity analyst
- Game designer
- Computer programmer

Engineering

- Architect
- Civil engineer
- Highway designer
- Urban planner
- Robotics technician
- Nuclear engineer

Math

- Accountant
- Economist
- Financial planner
- Surveyor
- Survey researcher

You Don't Always Need a Degree!

What do MRI technologists, electricians, radiation technologists and computer support specialists all have in common? None of these careers require a four-year college degree. Many STEM jobs are considered middle-skill occupations. These require more training than a high school diploma, but less than a bachelor's degree. For example, a high-paying technician career in the nuclear industry requires a certificate in radiation safety. This takes a total of one year and includes a summer internship at INL or another nuclear site. This certificate can be obtained at many colleges, including the College of Eastern Idaho (CEI). Another example is a degree or certification in information assurance or cybersecurity. A degree in applied science can be earned within two years, or a certificate in one year. These programs are also available at various colleges, including CEI.



Spark STEM Inspiration

You can incorporate STEM activities into your child's life in many ways. The following are some creative, fun ideas:

Laboratory at Home

Everyday things in your home can make a creative environment for children to learn about STEM. Have your child get involved in cooking by adding different ingredients to change the taste. You can ask, "Why does the egg look different once it's in the frying pan?" For more food chemistry, visit sciencekiddo.com/kitchen-science/.

Log on to code.org to have children learn about various coding exercises. Coding is writing instructions a computer needs in order to function. Legos are another great way for your child to engage in fun STEM activities. For awesome Lego activities, visit thestemlaboratory.com/lego-stem-activities/.

Online Activities

Online resources can increase your child's understanding and performance in STEM. Some interactive websites are discoveryeducation.com (provides free student resources), stemcollaborative.org (makes the math connection with four interactive online learning adventures), askdruniverse.wsu.edu (answers students' tough and smart questions), and stem-works.com (contains all things STEM).

Go Outside

Go anywhere local and examine the wildlife around you. Look at the birds and bugs and try to identify what species they are. During evenings, look at the stars and moon, or study the constellations and moon phases.

Learn Together

Parents have the opportunity to learn alongside their children when doing activities and should not be afraid to have questions themselves. Encourage your children to ask questions when they want to know something. These questions can often be easily answered online or through printed resources.

STEM Apps

There are some cool STEM apps that can help your child learn and engage in the realm of STEM. Many of these apps are free or cost as little as \$3. Just download the apps on a tablet, phone or computer.

Engineering and Inventions

- Crazy Gears
- Simple Machines by Tinybop
- The Robot Factory by Tinybop
- Inventioneers Full Version
- littleBits Invent
- Trainyard
- Minecraft - Pocket Edition
- World of Goo
- Autodesk Digital STEAM Applied Mechanics

Coding and Robotics

- Codeable Crafts
- Blockly for Dash & Dots Robots
- Tickle
- Sphero Edu
- Swift Playgrounds
- Cargo-Bot



Science and Math

- Bugs and Bubbles
- Playground Physics
- DIY Nano
- Autodesk Digital STEAM
- Measurement
- Volumize
- Lab4Physics
- The Pocket Lab

Community Resources

Many communities have fun activities that encourage children to get more involved in STEM fields. There are a number of Idaho-based resources that your child can interact with.

- **Museums:** Attend local museum exhibits and discover new things. EBR-I was the first power plant in the world to produce usable electricity from atomic energy and became a great interactive museum. For more information, visit inl.gov/experimental-breeder-reactor-i/.

- **Zoo:** Visit local zoos. Idaho Falls Zoo hosts a STEM day annually for second-graders. For more information, visit idahofallsidaho.gov/1230/Zoo.
- **Idaho Falls Power Plant:** Schedule a plant tour by visiting idahofallsidaho.gov/259/Plant-Tours.
- **Melaleuca the Wellness Company:** Explore internship opportunities at studentcareers-melaleuca.icims.com.
- **Eastern Idaho Regional Medical Center:** Become a junior volunteer and experience the combination of

science and technology in the medical industry. Visit eirmc.com/about/volunteers.dot.

- **Mountain View Hospital:** Become a volunteer by visiting mountainview-hospital.com/community/become-a-volunteer.dot.
- **City of Idaho Falls:** Apply for an internship or volunteer opportunity at idahofallsidaho.gov/192/Temporary-Jobs.
- **YMCA:** Check your local YMCA and see if they have STEM programs. Find your YMCA at ymca.net/find-your-y/.





How to Pick the Right High School Path

1. Consult a counselor as early as possible: Parents of middle school students should look ahead at the math and science courses that colleges prefer.
2. Plan on advanced classes: Taking AP-level classes during high school will expose your child to college-level material and can possibly give them college credit.
3. Ask about AP prerequisites: Some AP classes require prerequisites. College Board contains helpful preparation for students at collegeboard.org.
4. Have your child explore opportunities outside of the classroom: This could be looking into local college programs, joining a local math club or even looking up local STEM-related clubs. This will further your child's knowledge, experience and interest in STEM.

SAT and ACT Prep

The SAT and ACT are very important when applying to college. Here are some tips and tricks your child can use when preparing for the SAT and ACT:

1. Become familiar with the details – Understanding the test structure, instructions and types of questions will help prepare your child for success. For more details, visit act.org/ and collegereadiness.collegeboard.org/sat.
2. Practice, practice, practice – Take advantage of the practice full-length tests. In high school, your child is most likely going to take a practice SAT. There are also online practice tests for the ACT and SAT on their websites.
3. Start reading – Get your child a prep book that will help them prepare. ACT and SAT both have official prep books on their websites.
4. Find a class or tutoring – If your child is struggling with studying on their own, enroll them in a prep class or consider a private tutor. Many schools offer after-school programs or study groups.
5. Memorize – Have your child memorize basic math formulas and concepts. The SAT lists some formulas during the exam, but the ACT exam does not.

How to Apply for College

1. During their junior year, have your child tour different college campuses. This will help them decide on a college that fits their career interests.
2. Have your child fill out college applications. For examples, visit isu.edu/apply/ and uidaho.edu/admissions/apply.
3. Check if the colleges your child is interested in applying to use the Common Application. This allows students to apply for more than 750 schools nationwide, including the University of Idaho, with just one application. For more information, visit commonapp.org.
4. If required, have them write the admissions essay.
5. Make sure the colleges have received the required records from your child's high school and the necessary ACT and SAT scores.
6. Make sure your child's financial aid application is turned in before the deadline.
7. Make a choice! After receiving acceptance letters, have your child choose which college best suits them. Have them ask for teachers, and former classmates' advice about the colleges.

How to Get the Money

Students can take advantage of many opportunities to receive money for their college education. These include things like scholarships and FAFSA. The following are just a few scholarship ideas for students:

General Scholarships

Many websites contain scholarships in a variety of subjects.

1. fastweb.com
2. collegeboard.org
3. niche.com
4. scholarships.com

STEM Scholarships

1. **Scholarship for Service** – sfs.opm.gov: A unique program that awards scholarships to students in cybersecurity. All recipients must work after graduation for a federal, state, local or tribal government organization.
2. **Intertek** – intertek.com: Students can receive up to \$10,000.

3. **Scholarship America Dream Award** – scholarshipamerica.org: STEM award goes to second-year college students and beyond.

4. **Great Lakes Higher Education Corporation Awards** – community.mygreatlakes.org: Offers 750 STEM scholarships.

5. **The SMART Scholarship** – smartscholarshipprod.service-now.com/smart?id=scholarship_application_part_i: Full tuition provided if students are in STEM and willing to work for the Department of Defense upon graduation.

6. **Buick Achievers Scholarship Program** – usascholarships.com/buick-achievers-scholarship-program: College students can receive up to \$25,000.

7. **The Intel Science Talent Search** – student.societyforscience.org: Winners can receive up to \$150,000.

8. **Idaho Section, American Nuclear Society Scholarship** – ansidaho.org/community-outreach: High schoolers can receive up to \$1,500.

9. **The American Nuclear Society Scholarship Program** – ans.org/honors/scholarships/:

High school students and college students can receive awards up to \$4,000.

Scholarships for Women

1. **Society of Women Engineers Awards** – swe.org: For women who are pursuing careers in engineering, technology or computer science.

2. **Google Anita Borg Memorial Scholarship** – google.com/edu/students: Google awards \$10,000 to students of computer science or engineering.

3. **Palantir Scholarship for Women in Engineering** – palantir.com/college/scholarship: Scholarships from \$1,500 to \$10,000 awarded.

Underrepresented Minorities Scholarships

1. **Gates Millenium Scholars Program** – gmsp.org: Scholarships for undergraduate minority students.

2. **Xerox Technical Minority Scholarship** – xerox.com/jobs/: Up to \$10,000 for minority students in a technical or engineering field.



3. Society of Hispanic Professional Engineers Foundation Awards

– programs.shpe.org/scholarships: For students of Hispanic descent.

4. Hispanic Scholarship Fund Awards

– hsf.net: For students studying a broad spectrum of disciplines.

5. The Google Lime Scholarship

– google.com/edu/students: Google offers \$10,000 scholarships to computer science students with disabilities.

6. The Generation Google Scholarship

– google.com/edu/students: Google offers \$10,000 scholarships to underrepresented groups.

7. The National Institutes of Health Undergraduate Scholarship

– training.nih.gov/programs: Up to \$20,000 awarded to disadvantaged students in biomedical, behavioral and social science health-related research.

8. Microsoft Scholarships

– careers.microsoft.com: Scholarships are given to minorities and people with disabilities.

How to Apply for FAFSA

FAFSA is a Free Application for Federal Student Aid. It is one of the most important things your child can do to get financial aid for college. Even though forms of this type may appear daunting, if you follow these simple steps, the process will be easy:

Step 1: Gather all of the necessary information.

- Your child's driver's license and Social Security number.
- Your phone number and Social Security number.
- Your federal income tax returns.
- W-2 forms.
- Bank statements.
- Information about your investments (real estate, money market funds, stocks, etc.).

Step 2: Create an account.

- You and your child will need to provide a password and username, which is considered an FSA ID.

Step 3: Fill out the application.

- Fill out each designated section.

Step 4: Sign and submit your FAFSA!

- You and your child must sign the FAFSA form.
- Once the form has been submitted, it will process within three to five business days.

To apply, go to FAFSA.gov, submit your application as soon as possible. The deadline is Oct. 1 every year. College and state deadlines also must be taken into consideration. Apply annually to ensure your consideration in receiving financial aid.



You and Your Child are Now Equipped!

You are now armed with the necessary background information for your child to succeed in STEM careers. Not only will you be able to spark STEM interest, but you can help them learn how awesome STEM fields are. Now that you are equipped, your child is ready to tackle college and beyond!



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